Claims 1-17 (previously cancelled)

Claims 18-37 (cancelled herewith)

38.(new) A spin excitation method for exciting spins within an object to be imaged by a pulse sequence containing RF pulses having SLR waveforms, said method comprising the steps of:

obtaining parameters relevant to imaging including type of pulse sequence, repetition time, echo time, number of echoes, field of view, and image matrix size, and number of slices;

calculating from said parameters a predicted SAR of said object to be imaged in executing said pulse sequence;

comparing said predicted SAR with a predetermined limit of a standard SAR; and

adjusting at least one of the following characteristics of the RF pulses;

(a) modifying the SLR pulse waveform to be a sinc pulse waveform or a filtered pulse waveform;

(b) changing the pulse width of said RF pulse while leaving the SLR waveform otherwise unmbdified;

(c) changing the number of RF pulses; and

(d) a combination of the foregoing characteristics,

to control the predicted SAR to be within said predetermined limit without reducing the number of slices during a repetition time period.

39.(new) The method of claim 38, wherein said RF pulses are 180° pulses.

40.(new) The method of claim 38,wherein said filtered pulse waveform is produced by a Hamming filter.

41.(new) A spin excitation apparatus for exciting spins within an object to be imaged by a pulse sequence containing RF pulses having SLR waveforms, said apparatus comprising:

means for obtaining parameters relevant to imaging including type of pulse sequence, repetition time, echo time, number of echoes,field of view, and image matrix size, and number of slices;

means for calculating from said parameters a predicted SAR of said object to be imaged in executing said pulse sequence;

means for comparing said predicted SAR with a predetermined limit of a standard SAR; and

means for adjusting at least one of the following characteristics of the RF pulses:

(a) modifying the SLR pulse waveform to be a sinc pulse waveform or a filtered pulse waveform;

(b) changing the pulse width of said RF pulse while leaving the SLR waveform otherwise unmodified;

(c) changing the number of RF pulses; and

(d) a combination of the foregoing characteristics,

to control the predicted SAR to be within said predetermined limit without reducing the number of slices during a repetition time period.

42.(new) The apparatus of claim 41, wherein said means for adjusting comprises means for adjusting 180° pulses.

43.(new) The apparatus of claim 41, wherein said means for

adjusting comprises a Hamming filter to provide the filtered pulse waveform.

44.(new) A magnetic resonance imaging apparatus comprising:

means for generating a static magnetic field in a space containing an object to be imaged;

means for generating a gradient magnetic field in said space;

means for transmitting an rF excitation signal to said space;

means for receiving a magnetic resonance signal from said space; and

means for producing an image based on said received magnetic resonance signal; wherein

said means for transmitting includes a spin excitation apparatus for exciting spins within said object to be imaged by a pulse sequence containing RF pulses having SLR waveforms, said excitation apparatus comprising:

means for obtaining parameters relevant to imaging including type of pulse sequence, repetition time, echo time, number of echoes, field of view, and image matrix size, and number of slices;

means for calculating from said parameters a predicted SAR of said object to be imaged in executing said pulse sequence;

means for comparing said predicted SAR with a predetermined limit of a standard SAR; and

means for adjusting at least one of the following characteristics of the RF pulses:

(a) modifying the SLR pulse waveform to be a sinc pulse

waveform or a filtered pulse waveform;

(b) changing the pulse width of said RF pulse while leaving the SLR waveform otherwise unmodified;

(c) changing the number of RF pulses; and

(d) a combination of the foregoing characteristics,

to control the predicted SAR to be within said predetermined limit without reducing the number of slices during a repetition time period.

45.(new) The apparatus of claim 44, wherein said means for adjusting comprises means for adjusting 180° RF pulses.

46.(new) The apparatus of claim 44, wherein said means for adjusting comprises a Hamming filter to provide the filtered pulse waveform.

47.(new) A magnetic resonance imaging method comprising the steps of:

(A) generating a static magnetic field in a space containing an object to be imaged;

(B) generating a gradient magnetic field in said space;

(C) transmitting an RF excitation signal to said space;

(D) receiving a magnetic resonance signal from said space; and

(E) producing an image based on said received magnetic resonance signal; wherein

said transmitting step (C) includes a spin excitation procedure for exciting spins within said object to be imaged by a pulse sequence containing RF pulses having SLR waveforms,

said spin excitation procedure further comprising the steps of:

(I) obtaining parameters relevant to imaging including type of pulse sequence, repetition time, echo time, number of echoes, field of view, and image matrix size, and number of slices;

(II) calculating from said parameters a predicted SAR of said object to be imaged in executing said pulse sequence;

(III) comparing sadi predicted SAR with a predetermined limit of a standard SAR; and

(IV) adjusting at least one of the following characteristics of the RF pulses:

(a) modifying the SLR pulse waveform to be a sinc pulse waveform or a filtered pulse waveform;

(b) changing the pulse width of said RF pulse while leaving the SLR waveform otherwise unmodified;

(c) changing number of RF pulses; and

(d) a combination of the foregoing characteristics;

to control the predicted SAR to be within said predetermined limit without reducing the number of slices during a repetition time period.

48.(new) The method of claim 47, wherein said RF pulses are 180^{o} pulses.

49.(new) The method of claim 47, wherein said filtered pulse waveform is produced by use of a Hamming filter.